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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yudong Zhu

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
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EXAMINER

FETZNER, TIFFANY A

ART UNIT

PAPER NUMBER

2859

DATE MAILED: 04/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/065,036

Applicant(s)

ZHU ET AL.

Examiner

Tiffany A Fetzner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-15 and 17-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-15 and 17-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED Final ACTION

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Drawings

2. The objections to the drawings from the Office action mailed September 16th 2003 are **rescinded** in view of applicant's amendments to the specification on page 2 of the December 10th 2003 response.

Response to Arguments

3. Applicant's arguments filed December 10th 2003 have been fully considered but they are not persuasive, because although applicant is arguing that the examiner has not shown that the features of originally dependent claims 7, and 16, are met by the applied prior art, both **Machida** and **Wang et al.**, do in fact teaches the limitations argued by applicant. A detailed explanation, of how the amended limitations are met by each of the applied references, is provided in the rejection of the **amended independent** claims below. Therefore applicant's arguments on pages 8 through 10 of

the December 10th 2003 response are not persuasive, because the prior art does teach the features claimed

4. The examiner notes that originally dependent claims 7, and 16, have been added into the independent claims by the December 10th 2003 amendment, and that **original dependent claims of 7 and 16 are cancelled**, as per applicant's December 10th 2003 amendment and response.

5. Applicant also argues that the 103 rejections in the last office action are improper because there is no motivation to combine the references in connection with the newly amended features of the independent claims. The examiner is not persuaded by the argument because the amended features are limitations of each of the respective prior art references themselves, as mentioned in the detailed rejection of Amended **claims 1, 9, and 18** given below. A combination of references is not needed for the amended limitations to be met by the prior art of record. The references were used in combination with one another on the basis of an originally presented claim limitation, that is different than applicant's amended limitations.

6. Applicant's amendments to **independent claims 1, 9, and 18** necessitated a new / updated search, for additional pertinent prior art, specifically concerning the amended limitations. Because the originally applied art meets the requirements of the amended claims. The art applied has not changed. Additional art which addresses applicant's amended limitations to the independent claims, from the updated prior art search, are cited at the end of this action. The examiner recommends that applicant review these additional prior arts which are cited, but not applied as they provide

additional support for the examiner's position that **applicant's amended limitations to the independent claims, as currently set forth in the amended claims** are neither novel nor non-obvious over existing MRI methods, apparatuses, and systems.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. **Claims 1-6, 8-15, and 17-26 are Finally** rejected under **35 U.S.C. 103(a)** as being unpatentable over **Machida** US patent application publication 2002/0115929 A1 published August 22nd 2002; with an effective filing date of September 21st 2001; in view of **Wang et al.**, US patent 5,928, 148 issued July 27th 1999.

10. With respect to **claim 1**, **Machida** teaches and shows "An imaging apparatus for producing Magnetic Resonance (MR) images of a subject" {See Figure 1}, "the apparatus comprising: a magnet assembly for producing a static magnetic field;" {See Figure 1 and page 2 paragraph [0039] through page 3 paragraph [0040]} "a gradient

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coil assembly for generating a magnetic field gradient for use in producing MR images;" {See Figure 1 and page 2 paragraph [0039] through page 3 paragraph [0043]} "at least one radio frequency (rf) coil array disposed about the subject for transmitting a radio frequency pulse and for detecting a plurality of magnetic resonance (MR) signals induced from the subject for a given imaging sequence;" {See RF coil 7 Figure 1 and page 2 paragraph [0039] through page 3 paragraph [0044]} "a positioning device for supporting the subject and for translating the subject during imaging;" {See patient couch 17 and tabletop 17A of figure 1; page 1 paragraph [0006] through paragraph [0016]; page 2 paragraph [0039] through page 3 paragraph [0041]; and page 5 paragraph [0066] through page 7 paragraph [0108]} "a receiver for receiving the plurality of MR signals", where the receiver is "adapted to adjust the respective center frequencies" for each slice from which a signals is acquired "at a rate commensurate with a rate of translation of the positioning device". {See RF receiver 8R Figure 1 and page 2 paragraph [0039] through page 3 paragraph [0044] and page 5 paragraph [0066] through page 7 paragraph [0108]}.

11. Contrary to applicant's December 10th 2003 arguments that the features of originally dependent claims 7, and 16 are not met by the **Machida** reference. The examiner notes that **Machida** does teach "an image processor" {See Figure 1 Host computer 6 and calculator controller 10} "for computing a plurality of respective sub-images" (i.e. each slice of the multi-slice subjected to almost concurrent selective-excitation within the imaging range D, {See figures 4A, 4b, 4c, and 4d; page 5 paragraph [0063]} are broadly interpreted as sub-images by the examiner because they

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"correspond to a field-of-view" (i.e. the fixed imaging range D) "at a plurality of incremented locations of the subject" (i.e. ns=1, ns=2, ns=3, ns=4, ns=5 etc....) which are updated in position so that they are successively moved in the same direction as the moving table. [See paragraphs [0063] through [0066], especially paragraphs [0063] and [0064] } "and wherein the image processor" {See Figure 1 Host computer 6 and calculator controller 10} "is further adapted to combine a central portion of each sub-image" (i.e. the Host computer 6 and calculator controller 10 combine data from each slice of the multi-slice subjected to almost concurrent selective-excitation within the imaging range D, using a transmitter emitting a frequency of "central frequency f_0 + offset frequency Δf " to position the multiple slices and automatically track a movement of the object. **Machida** also determines the magnetic center C_m of every slice, and a center C_r in the actual space. [See page 6 col. 2 paragraph [0093] through paragraph [0099], figure 6]. Therefore the image slice data obtained by **Machida** contains data from "a central portion of each sub-image" (i.e. from the center of each slice of the multislice), "to form a composite image of the subject." [See page 5 paragraph [0064] through [0065] where **Machida** teaches that in viewing the system, data, (i.e. image data) from each of the slices allows an entire region of an object, (i.e. a 40cm region of the abdomen that is larger than the 15 cm imaging region) to be determined / imaged. The examiner notes that the 'abdomen image' is intrinsically a "composite image" because the image data for the 'abdomen image' originates from each of the slices.

12. Additionally, because applicant also argues in the December 10th 2003 amendment response that originally dependent claims 7, and 16 are not met by the

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Wang et al., reference either. The examiner in response to applicant's argument notes that **Wang et al.**, does teach "an image processor" [See component 106 of **Wang et al.**, figure 1 and array processor 161 from Figure 1}.] "for computing a plurality of respective sub-images" (i.e. successive portions of the MRA data set which "correspond to fields-of-view at a plurality of incremented locations of the subject" (i.e. concatenated FOV data) [See col. 3 lines 4-36] "and wherein the image processor is further adapted to combine a central portion of each sub-image to form a composite image of the subject", because **Wang et al.**, teaches that the respective centers of the fields-of-view are aligned with the magnet isocenter, therefore each of the incremented fields-of-view in **Wang et al.**, which are concatenated together, by the image processor to reconstruct the overall (i.e. composite" image contain NMR data from the central portion of each concatenated field-of-view. [See col. 3 lines 4-36, col. 5 line 24-68, component 106 of **Wang et al.**, figure 1 and array processor 161 from Figure 1]

13. **Machida** lacks directly teaching that there are "a plurality of receivers", configured in a similar manner to **Machida's** disclosed receiver. However, **Machida** teaches multi-slice imaging for a plurality of regions while the object is continuously moved. {See page 1 paragraph [0016]}.and it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Machida** to include a "a plurality of receivers", because the ability to have a separate reception coil for each region over which imaging is to be conducted has been a well-known and conventionally usable technique in the MRI art for well over a decade. Additionally, **Wang et al.**, specifically teaches using an array or plurality of reception

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coils for imaging different areas of a subject while a patient is translated through a magnetic resonance device. {See abstract, figure 3, figure 4, figure 8; col. 2 line 59 through column 3 line 10; col. 6 lines 1-42} this reference shows that the use of plural reception coils (i.e. as in an array) is conventional.

14. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Machida** which receives multiple signals with one reception coil; during patient translation with the teaching of **Wang et al.**, in combination, because **Wang et al.**, also acquires multiple imaging signals from a patient and teaches that the translation of the patient table into the field of view desired connects and disconnects successive local coil segments, from receiving signals; {See col. 2 line 59 through column 3 line 3.}, which directly suggests that the ability to detect multiple signals, while a patient is translated in an MR device, is readily performed by both a single reception coil, or a plurality of coils. The examiner notes that the specific MR application, cost, desired SNR or other factors conventionally determine the type of implementation on either an application or cost effective basis. The examiner also notes that simply increasing the number of reception coils is **not** a novel, non-obvious modification, because substituting an array of coils for a single coil; or a single coil for a plurality of coils, is a readily obvious modification to an individual of ordinary skill in the art.

15. With respect to **Amended Method claim 9**, **Machida** teaches and / or shows "A method for producing an image from an extended volume of interest within a subject using a Magnetic Resonance Imaging (MRI) system where the extended volume of

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interest is larger than an imaging portion of a magnet within the MRI system”, {See page 1 paragraph [0005] through page 2 paragraph [0021]; page 4 paragraph [0055] through page 5 paragraph [0066]} “the method comprising: translating the volume using a positioning device along an axis of the MRI system and imaging portions of the volume when they are within the imaging portion of the magnet,” {See Figures 1, 4a through 4d; page 1 paragraph [0005]; page 1 paragraph [0015 through page 2 paragraph [0021] page 4 paragraph [0055] through page 5 paragraph [0066]}. **Machida** also teaches and / or shows “detecting a plurality of MR signals from at least one radio frequency (RF) coil array for a given field-of-view within the MRI system as the positioning device is translating the volume,” {See Figures 1, 4a through 4d; page 1 paragraph [0005]; page 1 paragraph [0015 through page 2 paragraph [0021] page 4 paragraph [0055] through page 5 paragraph [0066]}. “sending the plurality of MR signals to a” receiver, (i.e. See Figure 1) with the receiver “adapted to adjust the respective center frequency at a rate commensurate with a rate of translation of the positioning device”, {See Figure 1; page 2 paragraph [0033] through page 3 paragraph [0044] and page 5 paragraph [0066] through page 7 paragraph [0108].} Additionally, **Machida** also teaches and / or shows “computing a plurality of respective sub-images corresponding to the plurality MR signals for the” receiver “and for the given field-of-view (FOV) at a plurality of incremented locations of the subject; and, combining the plurality of respective sub-images to form a composite image of the volume of interest” {See Figures 4a through 4d; page 2 paragraph [0018]; page 3 paragraph [0044] through paragraph [0050]; page 4 paragraph [0055] through page 6 paragraph [0088]}.

16. The amended limitation of "wherein the combining comprises combining a central portion of each sub-image to form the composite image" is taught by **Machida** for the same reasons as those already provided in the rejection of **amended independent claim 1**, which need not be reiterated.

17. **Machida** lacks directly teaching that there are "a plurality of receivers" configured in a similar manner to **Machida's** disclosed receiver. However **Machida** teaches multi-slice imaging for a plurality of regions while the object is continuously moved. {See page 1 paragraph [0016]}.and it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Machida** to include a "a plurality of receivers", because the ability to have a separate reception coil for each region over which imaging is to be conducted has been a well-known and conventionally usable technique in the MRI art for well over a decade. Additionally, **Wang et al.**, specifically teaches using an array or plurality of reception coils for imaging different areas of a subject while a patient is translated through a magnetic resonance device. {See abstract, figure 3, figure 4, figure 8; col. 2 line 59 through column 3 line. 10; col. 6 lines 1-42} this reference shows that the use of plural reception coils (i.e. as in an array) is conventional.

18. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Machida** which receives multiple signals with one reception coil; during patient translation with the teaching of **Wang et al.**, in combination, because **Wang et al.**, also acquires multiple imaging signals from a patient and teaches that the translation of the patient table into the field of view desired

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connects and disconnects successive local coil segments, from receiving signals; {See col. 2 line 59 through column 3 line 3.}, which directly suggests that the ability to detect multiple signals, while a patient is translated in an MR device, is readily performed by both a single reception coil, or a plurality of coils. The examiner notes that the specific MR application, cost, desired SNR or other factors conventionally determine the type of implementation on either an application or cost effective basis. The examiner also notes that simply increasing the number of reception coils is **not** a novel, non-obvious modification, because substituting an array of coils for a single coil; or a single coil for a plurality of coils, is a readily obvious modification to an individual of ordinary skill in the art. The same reasons for rejection, obviousness, and motivation to combine, that apply to **claim 1** also apply to **claim 9**.

19. With respect to **Amended Method claim 18**, **Machida** teaches and / or shows "A method for imaging an extended volume of interest within a subject using a Magnetic Resonance Imaging (MRI) system" {See page 1 paragraph [0005] through page 2 paragraph [0021]; page 4 paragraph [0055] through page 5 paragraph [0066]} "comprising: translating the subject into an imaging portion of a magnet assembly of the MRI system;" {See abstract, figure 1; page 3 paragraph [0041]; page 4 paragraphs [0055] through [0057]. "detecting a plurality of MR signals from a radio frequency (RF) coil array;" {See Figures 1, 4a through 4d; page 1 paragraph [0005]; page 1 paragraph [0015 through page 2 paragraph [0021] page 4 paragraph [0055] through page 5 paragraph [0066]}. "and, sending the plurality of MR signals to a" receiver, (i.e. receiver 8R of Figure 1) "the receiver being adapted to adjust a respective 'center frequency "'at

a rate commensurate with a rate of translation of the positioning device;" {See Figure 1; page 2 paragraph [0033] through page 3 paragraph [0044] and page 5 paragraph [0066] through page 7 paragraph [0108]}.

20. **Machida** teaches and / or shows the step of "reconstructing at least one image of the volume of interest by computing a plurality of respective sub-images corresponding to the plurality MR signals" from the receiver "and for the given field-of-view (FOV) at a plurality of incremented locations of the subject as the subject is translated and combining the plurality of respective sub-images to form a composite image of the volume of interest" (i.e. a image of a patients abdomen). {See Figures 1, 4a through 4d; 7A, 7b; page 4 paragraph [0048] through paragraph [0064]; page 2 paragraph [0018]}

21. The amended limitation of "wherein the combining comprises combining a central portion of each sub-image to form the composite image" is taught by **Machida** for the same reasons as those already provided in the rejection of **amended independent claim 1**, which need not be reiterated.

22. **Machida** lacks directly teaching that there are "a plurality of receivers", configured in a similar manner to **Machida's** disclosed receiver, however **Machida** teaches multi-slice imaging for a plurality of regions while the object is continuously moved. {See page 1 paragraph [0016]}.and it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Machida** to include a "a plurality of receivers", because the ability to have a separate reception coil for each region over which imaging is to be conducted has been a well-known and conventionally usable technique in the MRI art for well over a decade.

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Additionally, **Wang et al.**, specifically teaches using an array or plurality of reception coils for imaging different areas of a subject while a patient is translated through a magnetic resonance device. {See abstract, figure 3, figure 4, figure 8; col. 2 line 59 through column 3 line 10; col. 6 lines 1-42} this reference shows that the use of plural reception coils (i.e. as in an array) is conventional.

23. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Machida** which receives multiple signals with one reception coil; during patient translation with the teaching of **Wang et al.**, in combination, because **Wang et al.**, also acquires multiple imaging signals from a patient and teaches that the translation of the patient table into the field of view desired connects and disconnects successive local coil segments, from receiving signals; {See col. 2 line 59 through column 3 line 3.}, which directly suggests that the ability to detect multiple signals, while a patient is translated in an MR device, is readily performed by both a single reception coil, or a plurality of coils. The examiner notes that the specific MR application, cost, desired SNR or other factors conventionally determine the type of implementation on either an application or cost effective basis. The examiner also notes that simply increasing the number of reception coils is **not** a novel, non-obvious modification, because substituting an array of coils for a single coil; or a single coil for a plurality of coils, is a readily obvious modification to an individual of ordinary skill in the art. The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 9** also apply to **claim 18**.

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24. With respect to apparatus **claim 2**, and **corresponding method claims 10**, and **21** which depend respectively from **independent apparatus claim 1**, and **independent method claims 9**, and **18**; **Machida** teaches and shows that "the at least one rf coil array is mounted on a fixture that is disposed about the subject. {See RF receiver 8R Figure 1} The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 9, and 18** also apply to **claims 2, 10, and 21**.

25. With respect to apparatus **claim 3**, and **corresponding method claims 11**, and **22** which depend respectively from **independent apparatus claim 1**, and **independent method claims 9**, and **18**; **Machida** teaches and shows that "the fixture and rf coil array mounted thereon are stationary relative to the static magnetic field." {See RF receiver 8R Figure 1} The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 2, 9, 10, 18, and 21** also apply to **claims 3, 11 and 22**.

26. With respect to apparatus **claim 4**, and **corresponding method claims 12**, and **23** which depend respectively from **independent apparatus claim 1**, and **independent method claims 9**, and **18**; **Machida** lacks directly teaching that "the fixture and rf coil array mounted thereon are moveable relative to the static magnetic field." However, **Wang et al.**, teaches that this limitation is an alternative configuration with a plurality of reception coils. {See col. 6 lines 18-51} Therefore, because the substitution of a plurality of receiver coils for a single receiver coil is well known, {See the rejection of claim 1} the modification taught by **Wang et al.**, when using a plurality of reception coils would also have been obvious to one of ordinary skill in the art at the time that the invention was

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made. The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 2, 9, 10, 18, and 21** also apply to **claims 4, 12 and 23**.

27. With respect to apparatus **claim 5**, and **corresponding method claims 13, and 20** which depend respectively from **independent apparatus claim 1**, and **independent method claims 9, and 18**; **Machida** shows “the at least one rf coil array comprises a plurality of coil elements arranged in a orthogonal distribution relative to a frequency encoding direction” {See Figure 1, where the frequency encoding direction “X” is “arranged in a orthogonal distribution” to the RF coil 7 which gets signals from multiple slices.}. Because RF coil 7 acquires signals from a plurality of slice locations RF coil 7 broadly constitutes “at least one rf coil array, with a plurality of coil elements”. {See Figures 1, 4a through 4d, 7A, 7b}. The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 9, and 18** also apply to **claims 5, 13 and 20**.

28. With respect to apparatus **claim 6**, and **corresponding method claims 14, and 24** which depend respectively from **independent apparatus claim 1**, and **independent method claims 9, and 18**; **Machida** teaches and shows that “at least one rf coil array detects the MR signals concurrently with the translation of the positioning device”. {See RF receiver coil 18R page 1 paragraph [0015] through paragraph [0016]; page 4 paragraph [0057] through paragraph [0058]}. The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 9, and 18** also apply to **claims 6, 14 and 24**.

29. With respect to **claim 8**, **Machida** teaches and shows that "the imaging sequence is one of multi-slice, multi-slab, and volume imaging sequences." {See figures 2, 4a through 4d, 7a, 7b page 1 paragraphs [0002] and [0005]; and the entire reference in general as this limitation is taught throughout the reference repeatedly.} The same reasons for rejection, obviousness, and motivation to combine, that apply to **claim 1** also apply to **claim 2**.

30. With respect to **method claim 15**, and **corresponding method claims 25**, which depend respectively from **independent method claim 9**, and **independent method claim 18**; **Machida** teaches and shows that "the translating step is repeated until a selected length of the subject has been imaged inside the imaging portion of the magnet." {See Figures 1, 4a through 4d; page 1 paragraph [0005]; page 1 paragraph [0015 through page 2 paragraph [0021] page 4 paragraph [0055] through page 5 paragraph [0066]}. The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 9, and 18** also apply to **claims 15 and 25**.

31. With respect to **method claim 17**, and **corresponding method claims 19**, which depend respectively from **independent method claim 9**, and **independent method claim 18**; **Machida** teaches and shows that "the extended volume of interest" (i.e. of a patients abdomen which extends beyond the fixed range of the single multislice RF coil array), acquires slices as the patient is translated into the MR device in a "head-to-toe" direction, {See Figures 4a through 4d, which show that the slices move in a head-to-toe direction down the patient; and the teachings of page 4 paragraph [0055 through page 6 paragraph [0088] and page 1 paragraph [0005] through page 2

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paragraph [0021]]. The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 9, and 18** also apply to **claims 17 and 19**.

32. With respect to **method claim 26**, **Machida** teaches and shows that "the translating step is substantially continuous". {See abstract, page 1 paragraphs [0002], [0005] through [0016]; page 3 paragraph [0041] and the entire reference in general as substantially continuous translation of the patient is a main goal of the **Machida** reference. The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 9, and 18** also apply to **claim 26**.

33. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

34. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

35. The **prior art made of record** and not relied upon is considered pertinent to applicant's disclosure.

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- A) Meaney et al.**, US patent 5,924,987 issued July 20th 1999 which teaches obtaining data from the center of k-space for multiple fields-of-view and concatenating in a mosaic fashion the central k-space data to make an overall image.
- B) Hajnal** US patent 6,385,478 issued May 7th 2002, filed December 21st 1999 which teaches an MRI apparatus forming an image over an extended field of view, with continuous patient motion along the z-axis, restricted to a specific anatomical region.
- C) Pelc et al.**, US patent 6,445,181 B1 issued September 3rd 2002, filed November 9th 2000, which teaches an MRI method / apparatus for imaging a field of view which is larger than a magnetic field.
- D) Kruger et al.**, US patent application publication 2002/0173715 A1 published November 21st 2002, filed November 26th 2001, which teaches a method for acquiring MRI data from a large field-of-view using continuous table motion.

Conclusion

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

37. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(703) 872-9306**.



TAF
March 30, 2004



Diego Gutierrez
Supervisory Patent Examiner
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CHRISTOPHER W. FULTON
PRIMARY EXAMINER